Energy Efficiency
Motors and Drives infographics

Energy efficiency – a solution

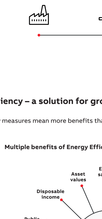
Pressures to reduce energy consumption and lower carbon dioxide emissions come from everywhere. The simplest way to address this challenge is to seize the opportunities for energy reduction that come from using energy more efficiently.

Using ABB's variable speed drives and high efficiency motors to intelligently run applications increases **energy efficiency**. This has enormous positive financial, operational and environmental implications.

Energy efficiency – motors and drives play a major role

Globally, demand for electricity will grow faster than for any other form of final energy. Thus, emissions will keep rising, unless we start doing something different.

Electricity demand 2016 - 2040



Electricity demand growth

61%

From 2016 to 2040

A lot of this electricity is used to power industrial electric motors

>40%
of all electricity used powers industry

2/3
of this is used by electric motors

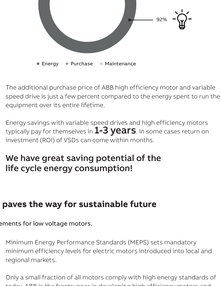
~ 30%
Global electricity consumption

Source: IEA WEO 2017

Energy Efficiency – a solution for growing energy demand

Energy efficiency measures mean more benefits than just energy savings.

Multiple benefits of Energy Efficiency



Energy Efficiency as a motivator

Position	Benefit
CFO	Savings, attractive return on investment (ROI), profitability
Plant manager	Production output, reliability, maintenance cost
Energy manager	Continuos improvement, savings, reliability
Sourcing manager	Price volatility risk, costs
Employees	Safe working environment, reliable employer

Energy efficiency pays back

Majority of life cycle costs for motors and drives consists of used energy.

Main elements of life cycle costs for a mechanically controlled pumping system

The additional purchase price of ABB high efficiency motor and variable speed drive is just a few percent compared to the energy spent to run the equipment over its entire lifetime.

Energy savings with variable speed drives and high efficiency motors typically pay for themselves in **1–3 years**. In some cases return on investment (ROI) of VSDs can come within months.

We have great saving potential of the life cycle energy consumption!

Regulations paves the way for sustainable future

Efficiency requirements for low voltage motors.

Minimum Energy Performance Standards (MEPS) sets mandatory minimum efficiency levels for electric motors introduced into local and regional markets.

Only a small fraction of all motors comply with high energy standards of today. ABB is the frontrunner in developing high efficiency motors and setting the bar for even more energy efficient motor technologies.

Also less than **20%** of world's motors are equipped with variable speed drives.

An intelligent motor control method can help in solving the energy challenges we all face

Variable speed drives (VSD) save energy in every rotation.

Power consumption of the fan at 50% and full speed

According to affinity laws, pumps and fans running half speed consume **only 1/8 of power**.

Variable speed drives regulate the speed of a motor (and pump or fan) and can reduce energy consumption by as much as **30% to 50%** in many applications and in extreme cases by as much as by **90%**. Every second motor is running a pump or fan.

Thanks to affinity laws, saving potential with speed control is huge, globally.

Save energy and optimize operations in a sustainable way

Variable speed drives and high efficiency motors are the most affordable and effective way to increase energy efficiency in industry.

In 2016 ABB installed motor system base globally saves:
490 TWh

490 TWh is **20%** more than annual electricity consumption in France.

Energy saved with ABB's variable speed drives

Significant annual energy savings implemented – but more needs to be done to decrease the ever growing demand for electricity.

The installed base of ABB drives saved about 515 TWh in 2017, equivalent to the consumption per year of more than 130 million households in EU.

If 515 TWh would have been generated by fossil fuel powered electricity plants, ABB drives reduced CO_2 emissions in 2017 by about 413 million tons, corresponding to the yearly emission of more than 105 million cars.

abb.com/motors
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